

AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions, and listings, in this application.

1. (currently amended) In a computer controlled game apparatus which includes a mechanism for inputting game operating information by a human player, a memory for storing data for displaying objects constituting a game image, an image display control for displaying the game image including at least two of said objects based on said operating information, said at least two objects constituting said game image each being a sound object that produces a sound, a waveform data storage memory for storing one or more sets of waveform data corresponding to one or more sounds produced by one ~~[[ore]]~~ or more sound objects, a sound producing position storage memory for storing sound producing position data indicating a producing position of the sound for each said sound object, and a microphone data storage memory for storing microphone data including sound collecting position data indicating a position at which a sound is to be collected during game play, a computer game sound control program product embodied on a computer-readable medium for distribution and/or storage on a computer controlled game apparatus, comprising:

program instruction means for computing sound volume data of sounds respectively produced by said sound objects based on both said sound producing position data and said microphone data;

program instruction means for dividing the sound volume data into sound volume component data corresponding to at least two directions;

program instruction means for classifying, out of all said sound objects, the sound objects which produce an identical sound; and

program instruction means for extracting a maximum sound volume component of said component data corresponding to two directions associated with a sound object producing said same sound and outputting the sound based on the waveform data of the object and said maximum sound volume component data of each component.

2. (previously presented) A computer game sound control program product according to claim 1, further comprising:

sound producing program instructions for computing localization data and the sound volume data of the sound to be output based on said maximum sound volume component data.

3. (previously presented) A computer game sound control program product according to claim 1, wherein

said microphone data further includes sound-collection direction data indicating a direction from which the sound is to be collected during the game, and

said program instruction means for dividing sound volume data divides, based on said sound producing position data and said sound-collection direction data, the sound volume data of a sound object into right sound volume data, left sound volume data, and surround sound volume data.

4. (previously presented) A computer game sound control program product according to claim 3, further comprising

object sound localization calculation instruction means for computing a localization of one sound based on the sounds of at least said two sound objects from said sound producing position data and said microphone data; wherein

said program instruction means for dividing sound volume data divides said sound volume data of sound object into the right sound volume data, the left sound volume data, and the surround sound volume data based on the localization of the sound calculated by said object sound localization calculating program.

5. (currently amended) A computer game sound control program product according to claim 3, wherein

said sound producing position data includes position data of a sound object represented by one coordinate data, and position data of the sound object having rail data defined by at least two coordinate data; further comprising

near coordinate calculating program instruction means for calculating coordinate data existing on a line connecting the coordinates indicating said rail data and most close to said sound collecting position data regarding the sound object having said rail data; wherein

said program instruction means for computing sound volume data computes the sound volume data of the sound object on the basis of the coordinate data computed by said near coordinate calculating program instruction means and said sound volume position data when computing the sound volume data of the sound object having said rail data,

said program instruction means for dividing sound volume component ~~component~~ data divides the sound volume data on the basis of the coordinate data computed by said near coordinate calculating program instruction means and said sound collecting position data, into the right sound volume data, the left sound volume data, and the surround sound volume data.

6. (previously presented) In a game apparatus that comprises a CPU, a mechanism for inputting game operating information, a memory for storing data for displaying objects constituting a game image, said game image comprising one or more game objects based on said operating information wherein at least two of said game objects constituting said game image are sound objects that produce a sound during game play, a memory for storing waveform data corresponding to sounds produced by one or more sound objects a memory for storing sound producing position data indicating a producing position of sound for a sound object, and a memory for storing microphone data comprising sound collecting position data for indicating a position at which a sound is to be collected during game play, a method for generating game sounds, comprising

the steps performed by said CPU, of:

- (a) computing sound volume data of sounds respectively generated by said sound objects on the basis of both said sound producing position data and said microphone data;
 - (b) dividing the sound volume data computed by said step (a) into said sound volume component data corresponding to at least two different directions;
 - (c) identifying, out of all said sound objects, objects producing the same sound;
- and
- (d) extracting a maximum sound volume component data for each component of said at least two directions associated with each said object producing the same sound, and outputting the sound based on the waveform data corresponding to said objects producing the game sound and the maximum sound volume component data of said each component.

7. (previously presented) A method for generating game sound according to claim 6, wherein

said extracting step includes computing localization data and sound volume data of the sound output based on said maximum sound volume component data.

8. (previously presented) A method for generating game sound according to claim 6, wherein

said microphone data further includes sound-collection direction data indicating a direction at which the sound is collected during game play,

said dividing step divides the sound volume data of said sound object volume from said sound producing position data and said sound-collection direction data into right sound volume data, left sound volume data, and surround sound volume data.

9. (previously presented) A method for generating game sound according to claim 8, further comprising :

(e) computing a localization of one sound from said sound producing position data and said microphone data based on the sound of said sound objects; wherein

said dividing step divides said sound volume data of said sound object volume based on a computed localization into the right sound volume data, the left sound volume data, and the surround sound volume data.

10. (previously presented) A method for generating game sound according to claim 8, wherein

said sound producing position data includes rail data sound source position data represented by point sound source position data represented by one coordinate data, and the rail data defined by at least two coordinate data; further comprising a step of:

(f) computing coordinate data of a location most close to said sound collecting position data regarding the sound object having said rail data existing on a line connecting coordinates indicating said rail data; wherein

said computing step computes the sound volume data of the sound object from computed coordinate data and said sound volume position data when computing the sound volume data of a sound object having said rail data, and

said dividing step divides the sound volume data into right sound volume data, left sound volume data, and surround sound volume data, respectively, on the basis of coordinate data calculated by said near coordinate calculation instructions and said sound collecting position data.

11. (currently amended) A video game apparatus capable of displaying a plurality of game objects and producing sounds associated with a plurality of sound generating objects, comprising:

a storage memory for storing sound waveform data corresponding to sounds associated with a plurality of sound generating objects;

a storage memory for storing sound producing position data indicating a

producing position of the sound for each said sound generating object;

a storage memory for storing microphone data including sound collecting position data for indicating one or more positions at which sound is collected during game play;

a sound volume calculator wherein sound volume data for one or more sound generating objects is computed based on said sound producing position data and said microphone data;

a sound volume component ~~divider~~ divider wherein the sound volume data computed by said sound volume data calculator is resolved into sound volume component data corresponding to two or more directions;

a sound ~~based~~ output mechanism which outputs audio sounds on said waveform data and said sound volume component data;

a sound generating object classify or that identifies, out of all said sound objects, which sound generating objects produce the same sound; and

a sound volume component extractor which resolves a maximum sound volume component data for each component of said two or more directions associated with each object that produces said same sound and which provides the waveform data of the sound generating object and the maximum sound volume component data of said each component to the sound output mechanism.

12. (previously presented) A video game apparatus according to claim 11, wherein said sound output mechanism includes a sound volume calculator for computing the localization data and the sound volume data of the sound output based on said maximum sound volume component data.

13. (currently amended) A video game apparatus according to claim 11, wherein said microphone data further includes the sound collecting direction data indicating a direction at which the sound is to be collected during [[the]] game play, said sound volume component ~~divider~~ divider divides the sound volume data of

said sound object from said sound producing position data and said sound-collection direction data into right sound volume data, left sound volume data, and surround sound volume data.

14. (currently amended) A video game apparatus according to claim 13, further comprising

an object sound localizer which computes a localization of a sound based on the sound of two or more sound objects from said sound producing position data and said microphone data; wherein

said sound volume component ~~divider~~ divider divides said sound volume data of said sound object based on a computed localization of the sound into the right sound volume data, the left sound volume data, and the surround sound volume data.

15. (currently amended) A video game apparatus according to claim 13, wherein said sound producing position data includes position data of a sound object having rail data represented by sound object position data represented by single coordinate data and rail data represented by multiple coordinate data; further comprising

a near coordinate calculating mechanism for computing the coordinate data existing on a line connecting coordinates indicating said rail data, and in a position most close to said sound collecting position data stored in said microphone data storing means regarding the sound object having said rail data; wherein

said sound volume data calculator computes the sound volume data of the sound object on the basis of the coordinate data computed by said near coordinate calculator and said sound volume position data when computing the sound volume data of the sound object having said rail data,

said sound volume component ~~divider~~ divider divides the sound volume data on the basis of the coordinate data computed by said near coordinate calculator and said sound collecting position data into the right sound volume data, the left sound volume

data, and the surround sound volume data.

16. (previously presented) A method for producing sounds associated with a plurality of displayable objects in a video game apparatus, comprising:

- storing sound waveforms data;
- storing sound production position data;
- storing sound collection position data;
- associating sound waveform data with one or more displayable objects;
- computing sound volume data for two or more sound generating displayable objects based on the sound producing position data and the sound collection position data;

- resolving sound volume data for said two or more sound generating displayable objects into sound component data comprising two or more directional components; and

- outputting sound data for two or more of said displayable objects based on waveform data associated with each said displayable object and one or more directional components of computed sound volume data of said displayable objects;

- wherein said video game apparatus includes and/or accepts memory storage devices for storing sound related data and a processor for computing and resolving sound volume data.

17. (previously presented) The method of claim 16 further comprising:

- identifying sound generating objects, out of said plurality of sound generating objects, that are associated with a same sound waveform;

- selecting volume component data corresponding to the maximum directional components of said sound volume component of each of said plurality of sound generating object; and

- associating selected maximum sound volume component with corresponding waveform data for each of said plurality of objects.